Sports Psychiatry: Journal of Sports and Exercise Psychiatry

A working research agenda for sports psychiatry: Advancing evidence-based psychiatry in sport, exercise, and physical activity

Malte Christian Claussen, Alan Currie, James W. Burger, David Prossor, and Ira Glick

Online First Publication, October 24, 2024. https://dx.doi.org/10.1024/2674-0052/a000090

Review

A working research agenda for sports psychiatry

Advancing evidence-based psychiatry in sport, exercise, and physical activity

Malte Christian Claussen[1,2], Alan Currie[3,4], James W. Burger[5,6], David Prossor[7], and Ira Glick[8]

[1]Research Group Sports Psychiatry, Center for Psychiatric Research, Department of Adult Psychiatry and Psychotherapy, Psychiatric University Clinic Zurich, University of Zurich, Switzerland
[2]Clinic for Depression and Anxiety, Psychiatric Centre Münsingen, Switzerland
[3]Regional Affective Disorders Service, Cumbria Northumberland Tyne and Wear NHS Foundation Trust, Newcastle upon Tyne, United Kingdom
[4]Faculty of Health Sciences and Wellbeing, University of Sunderland, United Kingdom
[5]Division of Neuropsychiatry, Department of Psychiatry and Mental Health, University of Cape Town, South Africa
[6]HIV Mental Health Research Group, Neuroscience Institute, University of Cape Town, South Africa
[7]Forensic Psychiatry, John Howard Centre, East London NHS Foundation Trust, United Kingdom
[8]Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, CA, USA

Abstract: *Introduction:* Sports psychiatry is an emerging medical and psychiatric discipline that has experienced significant development in recent years. This growth has been accompanied by an increase in scientific outputs from sports psychiatrists and other academics that address the three fields of activity of sports psychiatry: namely, mental health and disorders in competitive and elite sports, mental health and sport-specific mental disorders in recreational sports, and the use of sport, exercise and physical activity in the prevention and treatment of mental disorders. Conceptual publications have discussed the scope of sports psychiatry and education and training. However, some topics receive more attention than others, with evidence gaps in other key areas of sports psychiatry. Advancing the field towards evidence-based practice requires an assessment of the current state of the literature and the development of a strategic research agenda. *Methods:* Following the Working Group on Research Gaps, Priorities and Agenda at the Summit on Sports Psychiatry arranged by the International Society for Sports Psychiatry (ISSP), the ISSP Scientific Committee conducted a narrative review of the sports psychiatry literature to benchmark the current academic state of the discipline and further developed the research agenda to provide a strategic framework for future research directions. *Results:* We discuss a research agenda according to five key areas: sports psychiatry as a discipline, education and training in sports psychiatry, and the three clinical fields of activity of sports psychiatry. *Conclusion:* This sports psychiatry research agenda provides a framework to guide the strategic development of the scientific literature in the field.

Keywords: mental health and disorders, competitive and elite sports, physical activity, recreational sports, education and training

Introduction

Sports psychiatry has seen remarkable development in recent years reflected through sports psychiatry initiatives, professional societies, working groups and other networks established around the world. Sports psychiatry can be traced back to the late 1980s and early 1990s and especially the work of Massimino and Begel in the United States [1, 2] and the founding of the International Society for Sports Psychiatry (ISSP) in 1994 [3, 4]. International development has been complemented by the Section on Sport and Exercise in the World Psychiatric Association (WPA), and national sports psychiatry groups and societies in the UK, Germany, South Africa, Japan, Switzerland and others. However, there have been differences in the understanding and scope of sports psychiatry from one country to another. In some regions sports psychiatry has been extended to include sport, exercise and physical activity in the prevention and treatment of mental illness and disorders.

In order to address variations in the scope and understanding of sports psychiatry, in 2023 the ISSP initiated a summit of sports psychiatrists from around the world. From this, came a first international consensus statement with an agreed definition of both sports psychiatry and sports

psychiatrists [5]. This includes sports psychiatry's scope and fields of activity, and the essential knowledge, skills, abilities, and attitudes (eKSA^{+A}) of sports psychiatrists. A second paper explored sports psychiatry's role in performance restoration, maintenance, and enhancement in competitive and elite sports, and additional specific knowledge, skills, abilities, and attitudes (sKSA^{+A}) for sports psychiatrists necessary to support this [6].

Evidence-based medicine is central to delivering high quality patient care in every medical discipline, yet in the fields of activity where sports psychiatrists practice, large gaps in evidence and knowledge remain. This paper lays out a working research agenda aligned to the updated conceptualisation of sports psychiatry. It is intended to describe the necessary evidence that would better support the practice of sports psychiatry in three areas: the elite and high-performance sports setting; with recreational athletes; and the application of sports, exercise and physical activity interventions for those experiencing a mental illness.

Methods

The ISSP arranged a Summit on Sports Psychiatry at the end of 2023 with the aim of systematically developing sports psychiatry. Representatives from all countries with known sports psychiatry initiatives were invited to participate in the summit. The Working Group on "Research Gaps, Priorities & Agenda" was led by members of the ISSP Scientific Committee. Following on from the initial working group discussions, the ISSP Scientific Committee conducted a narrative review of the sports psychiatry literature to benchmark the current academic state of the discipline and further developed the research agenda to provide a strategic framework for future research directions. The content discussed here has been included according to the knowledge and experience of the authors, using a selection of works that are intended to provide context for this manuscript and examples.

Research agenda

The working research agenda for sports psychiatry can be conceptualised under five key areas (three of which clinical), aligning with the recently proposed structure and definitions of sports psychiatry and sports psychiatrists [5]:

Organisational and Educational Agenda

- Sports psychiatry as a discipline of medicine and psychiatry
- Education and training in sports psychiatry

Clinical Fields of Activity

- Mental health and disorders in competitive and elite sports
- Mental health and sports-specific mental disorders in recreational sports (including sport. exercise and physical activity undertaken for non-occupational purposes)
- Sport, exercise and physical activity in the prevention and treatment of mental disorders

All five key areas of activity in the research agenda for sports psychiatry and sports psychiatrists are shown in Figure 1.

Sports psychiatry as a discipline of medicine and psychiatry

As mentioned in the introduction, many of the developments in sports psychiatry have been regional and its understanding has varied accordingly, e.g., regarding the fields of activity of sports psychiatrists, the perspective on sports psychiatry as a medical and psychiatric and/or sports medicine discipline.

An internationally standardised definition of both sports psychiatry and the sports psychiatrist has been recently proposed. This included the fields of activity, the essential knowledge, skills, and abilities (plus attitudes, eKSA^{+A}) of the sports psychiatrist [5]. Sports psychiatrists are psychiatric physicians that diagnose conditions in the brain and the mind through the detection of symptoms, disorders, illnesses and associated problems.

Further research on sports psychiatry as a medical and psychiatric discipline should focus on:

- how and to what extent sports psychiatry should be integrated within sports medicine which is linked to the essential skills and knowledge of the sports psychiatrist (including attitudes)
- identification of the medicolegal and forensic psychiatric areas relevant to sports psychiatry

Surveys can provide direction based on current beliefs and practices within sports psychiatry and neighbouring disciplines, as well as identify additional and possibly unnoticed tasks and roles for sports psychiatry and sports psychiatrists. Surveys have been conducted in sports psychiatry, e.g., on prescribing preferences [7], on sports psychiatry activities among German-speaking health professionals [8], and a survey on the field of sports psychiatry is currently being conducted internationally under the auspices of the ISSP, as well as a survey on educational systems led by the sports psychiatry colleagues from Japan. Recording the current approaches to sports psychiatric problems can also be achieved by suitable surveys. However, surveys have their limitations and more robust research approaches for when there is an insufficient

<table>
<tr><td rowspan="4">Sports psychiatry as a discipline of sports medicine and psychiatry</td><td colspan="3">Periodic revision of sports psychiatry definitions, fields of activity, roles, and knowledge, skills, abilities and attitudes</td></tr>
<tr><td colspan="3">Current approaches to sports psychiatry practice</td></tr>
<tr><td colspan="3">Integration of sports psychiatry within sports medicine</td></tr>
<tr><td colspan="3">Medicolegal and forensic psychiatric areas relevant to sports psychiatry</td></tr>
<tr><td rowspan="3">Education and training in sports psychiatry</td><td colspan="3">Education and training requirements to be a sports psychiatrist</td></tr>
<tr><td colspan="3">Evaluation of existing sports psychiatry curricula</td></tr>
<tr><td colspan="3">Sports psychiatry education content and form: in medical student training, general psychiatrist training, and sports medicine training</td></tr>
<tr><td>Three clinical fields of activity</td><td>Mental health and disorders in competitive and elite sports</td><td>Mental health and sports-specific mental disorders in recreational sports</td><td>Sport, exercise and physical activity in the prevention and treatment of mental disorders</td></tr>
<tr><td rowspan="5">Working in health systems and athlete systems</td><td colspan="3">Mental health care models in sports psychiatry</td></tr>
<tr><td colspan="3">Dealing with mental health/disorders, stigmatisation, empowerment</td></tr>
<tr><td colspan="3">Mental health care of minorities, including parasport</td></tr>
<tr><td colspan="3">Ecological systems of sports and of athletes and their environment</td></tr>
<tr><td colspan="3">Violence and abuse in sports</td></tr>
<tr><td rowspan="3">Epidemiology</td><td colspan="2">Mental health and wellbeing of athletes, coaches and trainers, and referees</td><td rowspan="3">Sports and exercise behaviour, including facilitators and barriers:
• in general, disorder-specific, and sports-specific
• age groups: children, adolescents, young adults, adults, older people [> 65 years]
Influence of sport and exercise on the mental and physical health of psychiatric patients, with and without comorbid medical conditions</td></tr>
<tr><td colspan="2">Mental health symptoms and disorders in athletes, coaches and trainers, and referees:
• in general, and in sports-specific contexts
• Longitudinal studies over time
• time points: during, before, after the season/competitions, and during the non-competition and training periods
• time points: before, during, and after active sports career
• age groups: children, adolescents, young adults, adults, older people [> 65 years]</td></tr>
<tr><td></td><td>[1]Sports-specific mental disorders</td></tr>
<tr><td rowspan="4">Aetiopathogenesis and Influencing factors</td><td colspan="2">Biopsychosocial models of mental disorders in competitive and elite sports / recreational sports: in general and in disorder-specific and sports-specific contexts</td><td>Causes of lack of physical activity</td></tr>
<tr><td colspan="2">Mental health and disorders: relationship between physical health, mental health, and performance</td><td rowspan="2">Optimal dose of sports and exercise for mental health and for the prevention of mental disorders</td></tr>
<tr><td colspan="2">Psychodynamics of sports and performance</td></tr>
<tr><td colspan="3">Risk factors and influencing factors for mental disorders: biological, psychological, social and sport-specific factors</td></tr>
<tr><td colspan="3">Sports-specific risk factors and influencing factors on short-term and long-term mental health and cognition, including sport type and duration</td></tr>
</table>

Figure 1. Working research agenda for sports psychiatry: five areas to advance evidence-based sports psychiatry. 1e.g., disorders related to Imaging and Performance Enhancing Drugs (IPED), muscle dysmorphia, exercise addiction, and eating disorders and disturbed eating behaviour. Abbreviations: ECT = electroconvulsive therapy; rTMS = repetitive transcranial magnetic stimulation; tDCS = transcranial direct current stimulation; TNS = trigeminal nerve stimulation; VNS = vagus nerve stimulation.

<table>
<tr><td rowspan="3">Diagnostics and diagnosis</td><td>Diagnostics, incl. screening, and diagnosis of mental health symptoms and disorders: in general, and with disorder-specific and sport-specific considerations</td><td rowspan="3">Diagnostics of sports and exercise in individuals with mental disorders, incl. other lifestyle psychiatry factors [e.g., nutrition, sedentary behaviour, chronic disorders adaptation]</td></tr>
<tr><td>Acceptable and feasible methods of mental health screening and surveillance in local contexts</td></tr>
<tr><td>Biomarkers in athletic populations</td></tr>
<tr><td rowspan="5">Treatment</td><td>Evidence for sports psychiatry models of care</td><td>Evidence for sports and exercise in the treatment of mental disorders: in general, and disorder-specific</td></tr>
<tr><td>Evidence for sports psychiatric treatments:
• sports psychiatric psychotherapy
• sports psychiatric psychopharmacotherapy
• novel psychiatric interventions in sports, e.g., ketamine, and neurostimulation methods such as rTMS, ECT, and others (tDCS, TNS, VNS)</td><td>Treatment and prevention: type of sports and exercise, dose, efficacy, and differences, in general, and disorder-specific</td></tr>
<tr><td>Evidence for further psychiatric concepts, e.g. recovery, empowerment, and peers</td><td rowspan="2">Evidence for sports and exercise in combination with influencing factors, effects and side effects, safety etc:
• psychotherapy
• psychopharmacotherapy
• others: e.g., ketamine, and neurostimulation methods such as rTMS, ECT, and others (tDCS, TNS, VNS)</td></tr>
<tr><td>Performance restoration, maintenance, and enhancement in the presence and absence of mental disorders</td></tr>
<tr><td colspan="2">Evidence for sports and exercise in treatment for mental health symptoms and disorders in athletes</td></tr>
<tr><td rowspan="3">Ongoing care, and prevention</td><td>Evidence for sports psychiatric psychopharmacotherapy, and for performance restoration vs enhancement of psychopharmacotherapy in context of evolving anti-doping regulations; accurate use of therapeutic use exemption [TUE] for medication</td><td>Sports and exercise in ongoing care and prevention of mental disorders</td></tr>
<tr><td colspan="2">Return to sports: in general, and in disorder-specific and sports-specific contexts</td></tr>
<tr><td colspan="2">Recovery models</td></tr>
<tr><td rowspan="2">Cooperation</td><td colspan="2">Models of cooperation with sports physicians, physiotherapists, psychologists, psychotherapists, sports psychologists, sports scientists, etc</td></tr>
<tr><td colspan="2">Models of cooperation with sports psychiatrists in different international contexts and at international competitions</td></tr>
</table>

Figure 1. Working research agenda for sports psychiatry: five areas to advance evidence-based sports psychiatry. 1e.g., disorders related to Imaging and Performance Enhancing Drugs (IPED), muscle dysmorphia, exercise addiction, and eating disorders and disturbed eating behaviour. Abbreviations: ECT = electroconvulsive therapy; rTMS = repetitive transcranial magnetic stimulation; tDCS = transcranial direct current stimulation; TNS = trigeminal nerve stimulation; VNS = vagus nerve stimulation. (Continued)

evidence base, such as Delphi consensus, may also be appropriate for complex questions in sports psychiatry research, until the evidence base is strengthened.

Education and training in sports psychiatry

The needs, views and wishes of sports psychiatrists, and experts from neighbouring disciplines, for sports psychiatry education and training should be ascertained as a first step. The research strategy on sports psychiatry education and training should focus on the evaluation of existing curricula, education, and training, and accompany their further development. The ISSP offers a curriculum on sports psychiatry [9] and in other countries such as Switzerland and Germany, sports psychiatry curricula are being developed and have already been implemented in some cases [10]. In Canada, there is a sports psychiatry curriculum within sports medicine [11], and a curriculum is also offered by the IOC [12]. These curricula differ in their content (e.g., focus on competitive and elite sports or other fields of activity of sports psychiatrists), as well as the target group (e.g., psychiatrists, sports physicians and/or other professionals). In addition, there is also sports psychiatry content in medical student education, post-graduate psychiatry training and post-graduate sports medicine training.

It is important to scientifically address the question of where a sports psychiatry curriculum and/or training in sports psychiatry is best placed. Should it be located within psychiatric training, sports medicine training or as a standalone curriculum? Should the sports psychiatry curriculum cover the entire field of sports psychiatry or is it sufficient to address parts of the field according to the respective specialisation of the participants? Finally, sports psychiatry education and training delivered jointly with neighbouring disciplines should also be evaluated.

These questions have been included in the survey of German-speaking professionals in sports psychiatry [8]. The aforementioned survey on educational systems in sports psychiatry, which is currently being conducted by colleagues in sports psychiatry in Japan, and also the above-mentioned survey on sports psychiatry as part of the ISSP autopsies aim to address these questions on an international basis.

Mental health and disorders in competitive and elite sports

There are a considerable number of studies on mental health and disorders in competitive and elite sports, which were summarised by the International Olympic Committee (IOC) consensus statement on mental health in elite athletes and their systematic review series [13]. However, the majority of the literature has been published by non-sport psychiatrists, which may also explain certain key research and evidence gaps, such as the effectiveness of sports psychiatric treatment.

In the absence of a standardised research agenda, and representation of the perspectives of all relevant professionals, it is also likely that the literature will continue to further bias towards competitive and elite sports and certain popular mental health topics such as the psychology of injury [14], as well as concussion, depression, and eating disorders, among others. These concerns are supported by reviews of mental health topics in competitive and elite sports, such as Rice et al.'s systematic review on anxiety in elite athletes, for example, which highlight gaps in many disorders, a lack of cross-sport comparisons, and athlete-specific interventions [15].

Moreover, there is a lack of systematic scientific work into differentiated and longitudinal epidemiological data (before, during, and after training and competition periods or an athlete's active career). A topical example of this is within collision and contact sport research, where there is a call for high-quality longitudinal research into the long-term outcomes of sports, concussion, and head acceleration events, in order to better understand risk and management [16]. Much of the literature suffers also from a lack of good control groups, limiting how we can interpret and generalise the data. However, we are beginning to see larger cohorts and database studies with population controls, such as Kader et al.'s nationwide cohort looking at depressive and anxiety-related disorders in football [17].

Screening tools as the International Olympic Committee (IOC) Sport Mental Health Assessment Tool 1 (SMHAT-1) and Sport Mental Health Recognition Tool 1 (SMHRT-1) [18], as well as screening and surveillance guidelines [19] are attempting to standardise research and practice on mental health and disorders in competitive and elite sports. Although this work and initiatives are only to be welcomed, the focus must not move away from the established standards of psychiatric care, as highlighted in a comment by Claussen et al. on the SMHAT-1 [20]. It is incumbent on sports psychiatry and sports psychiatrists to continue to become more actively involved in central issues of psychiatry and sports psychiatry in competitive and elite sports, such as the diagnosis and treatment of mental health problems, and to translate these efforts into research outputs in the future.

Moreover, the prescribing preferences of sports psychiatrists can be different from general psychiatry trends, often to balance the medication effects and side effects in athletes [7]. It is of high importance to further establish evidence-based treatment guidelines for athletes in competitive and elite sports. High-quality guidelines will require evidence

that delineates disorder-specific treatments by sports psychiatrists. There is a call for athlete-specific medication trials to assess their effects at physiological extremes and on performance, by authors who have summarised expert opinion for psychotropic agents for severe mental disorders [21], and this similarly applies to the common mental disorders. Studies on psychotherapy and the comparison of different psychotherapeutic methods in an athletic context are of great importance in this context, among others.

Currently, also many epidemiologic and treatment studies are based on screening tools and questionnaires. The literature base needs to move towards diagnosable mental disorders using clinical interviews and diagnostic data. It needs to quantify risk factors, biomarkers, and evidence-based treatments in athletes. One example where clinical interview is likely to lead to accurate diagnosis, improved estimates of condition prevalence and more balanced research representation would be in post-traumatic stress disorder (including dissociative symptoms), adjustment disorder and substance misuse disorders within athlete populations [22]. Without high quality evidenced based research, it will not be possible to detect sports-specific drivers of disorders and identify the required systematic processes that will serve to guide sports organisations on how to design services to achieve such clinical interviews to support athletes and their teams.

Areas of complexity that have sports-specific psychiatric causes and stress-mediated performance failure (e.g. 'twisties' in gymnastics, 'yips' etc) may have overlapping symptomatology where, without robust clinical interview, they are unlikely to be captured accurately in any survey [23]. There are also athlete groups who, in the context of severe physical or psychiatric injury, are either deselected from high performance teams or experience an early sudden retirement, and do not receive integrated medical and psychiatric care as standard practice [24, 25].

A key population of competitive athletes are also children and adolescents, particularly those who may fall outside of the medical and athlete support networks that accompany elite athlete development pathways and high-performance settings. As many of the initial presentations of mental health disorders occur in late adolescence, sports psychiatry research should place particular focus on this group. Due to limitations in our current understanding of mental health in elite youth athletes and the best practice principles, Walton et al. have called for prioritisation of mental health research in this population [26].

Adolescent athlete populations who have adapted to the duality of academic pressures and intensive sports training regimes are a vital research group in the prevention and treatment of a wide range of disorders including overtraining syndrome and functional disorders. There is a need to understand the relevant key psychosocial factors, psychodynamic drivers, training loads and identity / personality development of these athletes in relation to their symptoms. Supporting other medical specialties in collaborative research to develop comprehensive and holistic treatment strategies for these recreational athletes will be a priority [27, 28]. Figure 1 presents the proposed working research agenda for sports psychiatry on mental health and disorders in competitive and elite sports.

Calls for further evidence have been made also by role-players in the IOC Mental Health Working Group, such as in an initial sports psychiatry research agenda published by Currie and Purcell in 2021 [29], as well as the editorial of Currie et al. in the BJSM on the future directions on athlete mental health [30]. In both these publications significant gaps in the evidence base are highlighted. These include groups that are often under-represented in mental health surveys such as female athletes; LGBTQIA+ athletes; individual rather than team sports; ethnic minority groups; para-athletes; officials; coaches; and entourage members. Studies are commonly restricted to identifying symptoms (by questionnaire) rather than clarifying a diagnosis or presence of a disorder (which requires a clinical evaluation) and therefore little is known about the prevalence of illness or disorder in elite sport. Longitudinal studies are needed to understand the onset and course of mental health symptoms and disorders. Further research is required to identify stressors that may promote poor mental health and the needs of young athletes entering elite sport are not fully evaluated. The relationship between athletic and disability identity and how this exacerbates retirement stressors for athletes in parasports is poorly understood. Psychological and pharmacological treatment specific to athletes and the sporting context also require a stronger evidence base beyond simple extrapolation from the general population.

Mental health and sports-specific mental disorders in recreational sports

Mental health and sport-specific mental disorders in recreational sports belong to the most recent field of activity of sports psychiatry [31]. The term 'recreational sport' is used to include all sport, exercise and physical activity by the general population. The use of Image and Performance Enhancing Drugs (IPED) and their psychiatric consequences, muscle dysmorphia, sports and exercise addiction, and certain aspects of disordered eating and eating disorders warrant specific attention among recreational athletes.

Consistent with the two sections 'Mental Health and Disorders in Competitive and Elite Sports' and 'Sports and Exercise in the Prevention and Treatment of Mental Disorders', the important literature for this section also comes from general psychiatrists and other disciplines. Sport psychiatry needs to build an appropriate research initiative

in this area. Currently there is no systematic inclusion of topics in a sports psychiatry research agenda, although there is a systematic approach to research observed in the literature on specific topics and specific disorders. A good example of this is the intensive research and literature on eating disorders and disordered eating behaviour in the context of sports and exercise [32, 33].

With sports psychiatrists seeing these conditions arising in recreational sports, it is key for research to advance our understanding of their aetiopathogenesis, epidemiology, presentation, and evidence-based management in this setting. Future research should explore differences within and across recreational sports, as well as between recreational sports and competitive and elite settings, and between recreational sports and the general population.

The use of anabolic steroids in recreational sports has recently attracted increasing social and scientific attention. Doping and/or substance use are not an exclusive problem of competitive and elite sport but are embedded in recreational sports [34]. Treatment and harm reduction are core competencies of addiction medicine and psychiatry [35], and it is therefore important that sports psychiatry addresses this problem in its working research agenda. The prevalence of the use of IPED, the most important of which are anabolic androgenic steroids (AAS, anabolic steroids), is very high in recreational sports [36]. This, and not least because of the serious consequences for mental and physical health that the use of these substances' entails, is also associated with significant aspects of public health. The research topics of sports psychiatry and sports psychiatrists in recreational sports are like those in competitive and elite sports and are presented in Figure 1.

Sport, exercise and physical activity in the prevention and treatment of mental disorders

Sports, exercise and physical activity have been studied extensively in mental disorders, especially in the treatment of anxiety disorders and depressive disorders [37]. Studies have shown that in depressive disorders, remission rates from exercise can be comparable to those from medication [38], including when there are other comorbid medical conditions like cardiovascular disease [39]. Preliminary evidence also shows a benefit of sport, exercise and physical activity on psychosocial outcomes in children and adolescents, but evidence is currently weaker [40]. However, a systematic and scientific examination of the research as applicable to the direct clinical work of psychiatrists is required, particularly in the identification of dose dependent benefits and practical implementation within different psychiatric sub-specialties. Exceptions are, the position paper of the Swiss Society for Sports Psychiatry and Psychotherapy on physical activity and mental health [41] and two German-language sports psychiatry books on this topic [42, 43]. The second of these is the first textbook to include sport, exercise and physical activity for both prevention and therapy in mental disorders from the perspective of sports psychiatry [43].

It is recommended that sports, exercise and physical activity are utilised in the management of severe psychiatric disorders [44, 45] where they can help manage the conditions and improve physical health. There is a correlation between physical health and mental health [46], and mental disorders are associated with a significantly reduced life expectancy, which cannot be explained by the underlying mental disorders alone [47]. However much of the evidence is extrapolated from the cardiovascular benefits of physical activity in the general population [48]. Sports, exercise and physical activity has also been shown to improve cardiorespiratory fitness in mental disorders like depressive disorders [49, 50]. More research is required to develop the most effective means of integrating this into care in severe mental illness e.g., schizophrenia [48, 51, 52].

Despite the considerable scientific literature and evidence on sport, exercise and physical activity in the treatment and prevention of mental disorders, many questions require continued attention with further development of our understanding. While integrative frameworks of biological and psychosocial mechanism have been proposed [53] we should continue to develop our understanding of the therapeutic mechanisms of these interventions for mental health. As highlighted in a 2018 review by Stubbs et al. [44], gaps include the optimal type and dose of physical activity for mental health in specific disorders, potential differences between forms of sports and exercise in the prevention and treatment of mental disorders, and cost-effectiveness. Better understanding of the limitations of sports, exercise and physical activity for mental health needs to be developed, such as the suggested differentiated benefits of physical activity in leisure and active transport compared with occupational settings, and its mechanisms in mental health. There is also need for research on the use of sports, exercise and physical activity alongside psychopharmacotherapy, especially if used in combination, to reduce the risks associated with polypharmacy. Figure 1 lists a selection of the contents that a sports psychiatry working research agenda in health sports should contain.

Funding and support

High-quality research requires funding and capacity to implement. Certain sports bodies, like World Rugby, have identified mental health topics as research priorities in their calls for funding application [54]. We call for the support of sports psychiatry research by international and

national organisations, such as National Olympic Committees and more-resourced sporting bodies, to prioritise funding of these sports psychiatry topics. International grants represent a promising avenue for sports psychiatry researchers to explore, particularly within the field of sports and exercise interventions for mental health. This focus area may garner increased attention from research centres and funding agencies due to its potential for widespread applicability and impact.

The ISSP also supports further research and development in several ways, as do other sports psychiatry working groups, sections, and societies. For example, the ISSP scientific committee organises regular scientific symposia to share and discuss new research and has a funding programme where new researchers can apply for financial assistance with their projects [55]. If future funding is available, it is also the intention of the authors and members of the ISSP scientific committee, e.g. to establish an international sports psychiatry research platform and website where searchable details of researchers and working groups and their projects will be hosted to facilitate the development of international collaborative research projects.

Conclusion and outlook

Evidence-based sports psychiatry is growing in its contributions to the academic literature, although several knowledge and research gaps remain. The ISSP Summit on Sports Psychiatry and subsequent initiatives have shown that internationally networked sports psychiatry research is possible. The current agreed definitions for sports psychiatry and its fields of activity [5] provide a scaffold through which to structure approaches to research and training. This proposed working research agenda for sports psychiatry aims to provide direction for coordinated scientific efforts in the field. Systematic growth of the literature base in each of the three fields of activity of sports psychiatry will inform education and training, allowing for improved competency of practitioners in sports psychiatry and neighbouring disciplines. As the practise of sports psychiatry develops, it will be increasingly informed by an evidence base [56]. Iterative development of the discipline will require periodically revisiting the scope of sports psychiatry and its research agenda. This will include, if necessary, adjusting the definitions to reflect the evidence-based evolution of practise in each of the three fields described here.

References

1. Massimino JHR. Sport psychiatry. Ann Sports Med. 1987;3(2):55–8.
2. Begel D. An overview of sport psychiatry. Am J Psychiatry. 1992;149(5):606–14. https://doi.org/10.1176/ajp.149.5.606
3. Begel D. Sport psychiatry twenty-four years later. Int Rev Psychiatry. 2016;28(6):547–50. https://doi.org/10.1080/09540261.2016.1202215
4. Glick ID, Stull T, Currie A. Development of sports psychiatry in the United States and internationally. Sports Psychiatry. 2022;1(1):3–5. https://doi.org/10.1024/2674-0052/a000002
5. Claussen MC, Currie A, Koh Boon Yau E, Nishida M, Martínez V, Burger J, et al. First international consensus statement on sports psychiatry. Scand J Med Sci Sports. 2024;34(4):e14627. https://doi.org/10.1111/sms.14627
6. Claussen MC, Burger J, Menon R, Nishida M, Koh Boon Yau E, Nahman N, et al. The Underestimated Role of the Sports Psychiatrist in Athletic Performance Restoration, Maintenance, and Enhancement in Sports. Scand J Med Sci Sports. 2024:e14627. https://doi.org/10.1111/sms.14697
7. Reardon CL, Creado S. Psychiatric medication preferences of sports psychiatrists. Phys Sportsmed. 2016;44(4):397–402. https://doi.org/10.1080/00913847.2016.1216719
8. Claussen MC, Imboden C, Hemmeter UM, Iff S. Sports psychiatry: Discipline, areas of activity, collaboration, and training. Sports psychiatry. 2022;1(3):90–9. https://doi.org/10.1024/2674-0052/a000022
9. ISSP Certificate of Additional Training in Sports Psychiatry [Internet]. State of Wisconsin: International Society for Sports Psychiatry (ISSP); [cited 2024 March 28]. Available from: https://www.sportspsychiatry.org/page-18106
10. Hofmann CG, Claussen MC. The three-level curriculum sports psychiatry and an evaluation of the first course "basic healthcare in sports psychiatry". Praxis [Bern 1994]. 2022;110(4):180–4. https://doi.org/10.1024/1661-8157/a003845
11. Edwards C. Sports psychiatry clinical curriculum for sports and exercise medicine fellows in one Canadian university. Sports psychiatry. 2023;2(3):89–94. https://doi.org/10.1024/2674-0052/a000054
12. International Olympic Committee (IOC) Diploma in Mental Health in Elite Sport [Internet]. Aberdeen: Sportsoracle Limited; [cited 2024 March 28]. Available from: https://www.sportsoracle.com/course/ioc-diploma-in-mental-health-in-elite-sport/
13. Reardon CL, Hainline B, Aron CM, Baron D, Baum AL, Bindra A, et al. Mental health in elite athletes: International Olympic Committee consensus statement (2019). Br J Sports Med. 2019;53(11):667–99. https://doi.org/10.1136/bjsports-2019-100715
14. Tranaeus U, Gledhill A, Johnson U, Podlog L, Wadey R, Wiese Bjornstal D, et al. 50 Years of Research on the Psychology of Sport Injury: A Consensus Statement. Sports Med. 2024;54:1733–48. https://doi.org/10.1007/s40279-024-02045-w
15. Rice SM, Gwyther K, Santesteban-Echarri O, Baron D, Gorczynski P, Gouttebarge V, Reardon CL, Hitchcock ME, Hainline B, Purcell R. Determinants of anxiety in elite athletes: a systematic review and meta-analysis. Br J Sports Med. 2019;53(11):722–30. https://doi.org/10.1136/bjsports-2019-100620
16. Patricios JS, Schneider KJ, Dvorak J, Ahmed OH, Blauwet C, Cantu RC, et al. Consensus statement on concussion in sport: the 6th International Conference on Concussion in Sport-Amsterdam, October 2022. Br J Sports Med. 2023;57(11):695–711. https://doi.org/10.1136/bjsports-2023-106898
17. Kader M, Pasternak B, Lim CE, Neovius M, Forssblad M, Svanström H, et al. Depression and anxiety-related disorders and suicide among Swedish male elite football players: a nationwide cohort study. Br J Sports Med. 2024;58(2):66–72. https://doi.org/10.1136/bjsports-2023-107286
18. Gouttebarge V, Bindra A, Blauwet C, Campriani N, Currie A, Engebretsen L, et al. International Olympic Committee (IOC) Sport Mental Health Assessment Tool 1 (SMHAT-1) and Sport

Mental Health Recognition Tool 1 (SMHRT-1): towards better support of athletes' mental health. Br J Sports Med. 2021; 55(1):30–7. https://doi.org/10.1136/bjsports-2020-102411
19. Mountjoy M, Junge A, Bindra A, Blauwet C, Budgett R, Currie A, et al. Surveillance of athlete mental health symptoms and disorders: a supplement to the International Olympic Committee's consensus statement on injury and illness surveillance. Br J Sports Med. 2023;57(21):1351–60. https://doi.org/10.1136/bjsports-2022-106687
20. Claussen MC, Gonzalez Hofmann C, Imboden C, Hemmeter U, Raas MI, Seifritz E, et al. Mental health assessment and management in elite athletes: Comment to the IOC Sport Mental Health Assessment Tool 1 (SMHAT-1). Br J Sports Med. [Internet]. March 3, 2021 [cited March 28, 2024]. Available from: https://bjsm.bmj.com/content/55/1/30.responses
21. Currie A, Gorczynski P, Rice SM, Purcell R, McAllister-Williams RH, Hitchcock ME, et al. Bipolar and psychotic disorders in elite athletes: a narrative review. Br J Sports Med. 2019;53(12): 746–53. https://doi.org/10.1136/bjsports-2019-100685
22. Lynch JH. Posttraumatic Stress Disorder in Elite Athletes. Curr Sports Med Rep. 2021;20(12):645–50. https://doi.org/10.1249/JSR.0000000000000918
23. Yu G, Chang KF, Shih IT. An exploration of the antecedents and mechanisms causing athletes' stress and twisties symptom. Heliyon. 2022;8(10): e11040. https://doi.org/10.1016/j.heliyon.2022.e11040
24. Back J, Stenling A, Solstad BE, Svedberg P, Johnson U, Ntoumanis N, et al. Psychosocial Predictors of Drop-Out from Organised Sport: A Prospective Study in Adolescent Soccer. Int J Environ Res Public Health. 2022;19(24):16585. https://doi.org/10.3390/ijerph192416585
25. Mountjoy M, Rhind DJ, Tiivas A, Leglise M. Safeguarding the child athlete in sport: a review, a framework and recommendations for the IOC youth athlete development model. Br J Sports Med. 2015;49(13):883–6. https://doi.org/10.1136/bjsports-2015-094619
26. Walton CC, Purcell R, Henderson JL, Kim J, Kerr G, Frost J, et al. Mental Health Among Elite Youth Athletes: A Narrative Overview to Advance Research and Practice. Sports Health. 2024;16(2): 166–76. https://doi.org/10.1177/19417381231219230
27. Armstrong LE, Bergeron MF, Lee EC, Mershon JE, Armstrong EM. Overtraining Syndrome as a Complex Systems Phenomenon. Front Netw Physiol. 2022;1:794392. https://doi.org/10.3389/fnetp.2021.794392
28. Brenner JS, Watson A. Council on sports medicine and fitness. Overuse Injuries, Overtraining, and Burnout in Young Athletes. Pediatrics. 2024;153(2):e2023065129. https://doi.org/10.1542/peds.2023-065129
29. Currie A, Purcell R. Sport Psychiatry and Its Research Agenda. Psychiatry Clin North Am. 2021;44(3):493–505. https://doi.org/10.1016/j.psc.2021.04.007
30. Currie A, Blauwet C, Bindra A, Budgett R, Campriani N, Hainline B, et al. Athlete mental health: future directions. Br J Sports Med. 2021;55(22):1243–1244. https://doi.org/10.1136/bjsports-2021-104443
31. Claussen MC. Sports psychiatry: discipline and fields of activity. Dtsch Z Sportmed. 2021;72:1–2. https://doi.org/10.5960/dzsm.2021.483
32. Kussman A, Choo HJ. Mental Health and Disordered Eating in Athletes. Clin Sports Med. 2024;43(1):71–91. https://doi.org/10.1016/j.csm.2023.07.001
33. Pensgaard AM, Sundgot-Borgen J, Edwards C, Jacobsen AU, Mountjoy M. Intersection of mental health issues and Relative Energy Deficiency in Sport (REDs): a narrative review by a subgroup of the IOC consensus on REDs. Br J Sports Med. 2023;57(17):1127–35. https://doi.org/10.1136/bjsports-2023-106867
34. Iff S, Butzke I, Zitzmann M, Schneiter R, Hunziker M, Quednow BB, et al. IPED in Recreational Sports. Praxis (Bern 1994). 2022;111(6):e345–e349. https://doi.org/10.1024/1661-8157/a003873
35. Butzke I, Iff S, Zitzmann M, Quednow BB, Claussen MC, Interdisciplinary and Psychiatric Treatment of Anabolic Androgenic Steroids Users. Praxis (Bern 1994). 2022;111(6): e339–e344. https://doi.org/10.1024/1661-8157/a003868
36. Sagoe D, Molde H, Andreassen CS, Torsheim T, Pallesen S. The global epidemiology of anabolic-androgenic steroid use: a meta-analysis and meta-regression analysis. Ann Epidemiol. 2014;24(5):383–98. https://doi.org/10.1016/j.annepidem.2014.01.009
37. Wanjau MN, Möller H, Haigh F, Milat A, Hayek R, Lucas P, et al. Physical Activity and Depression and Anxiety Disorders: A Systematic Review of Reviews and Assessment of Causality. AJPM Focus. 2023;2(2):100074. https://doi.org/10.1016/j.focus.2023.100074
38. Blumenthal JA, Babyak MA, Doraiswamy PM, Watkins L, Hoffman BM, Barbour KA, et al. Exercise and pharmacotherapy in the treatment of major depressive disorder. Psychosom Med. 2007;69(7):587–96. https://doi.org/10.1097/PSY.0b013e318148c19a
39. Blumenthal JA, Sherwood A, Babyak MA, Watkins LL, Smith PJ, Hoffman BM, et al. Exercise and pharmacological treatment of depressive symptoms in patients with coronary heart disease: results from the UPBEAT (Understanding the Prognostic Benefits of Exercise and Antidepressant Therapy) study. J Am Coll Cardiol. 2012;60(12):1053–63. https://doi.org/10.1016/j.jacc.2012.04.040
40. Purgato M, Cadorin C, Prina E, Cabral Ferreira M, Del Piccolo L, Gerber M, et al. Umbrella Systematic Review and Meta-Analysis: Physical Activity as an Effective Therapeutic Strategy for Improving Psychosocial Outcomes in Children and Adolescents. J Am Acad Child Adolesc Psychiatry. 2024;63(2):172–83. https://doi.org/10.1016/j.jaac.2023.04.017
41. Imboden C, Claussen MC, Gerber M, Gonzalez Hofmann C, Hemmeter U, Seifritz S. Swiss Society for Sports Psychiatry and Psychotherapy SSSPP Position paper: Physical activity and mental health. Sport & Exercise Medicine Switzerland. 2020;68(3):14–8. https://doi.org/10.34045/sems/2020/21
42. Markser VZ, Bär KJ. Sport- und Bewegungstherapie bei seelischen Erkrankungen: Forschungsstand und Praxisempfehlungen. Stuttgart: Schattauer Verlag; 2015.
43. Claussen MC, Seifritz E (Eds.). Lehrbuch der Sportpsychiatrie und -psychotherapie – Band 2: Sport und Bewegung bei psychischen Erkrankungen. Bern: Hogrefe; 2024.
44. Stubbs B, Vancampfort D, Hallgren M, Firth J, Veronese N, Solmi M, et al. EPA guidance on physical activity as a treatment for severe mental illness: a meta-review of the evidence and Position Statement from the European Psychiatric Association (EPA), supported by the International Organization of Physical Therapists in Mental Health (IOPTMH). Eur Psychiatry. 2018;54:124–44. https://doi.org/10.1016/j.eurpsy.2018.07.004
45. Vancampfort D, Firth J, Schuch FB, Rosenbaum S, Mugisha J, Hallgren M, et al. Sedentary behavior and physical activity levels in people with schizophrenia, bipolar disorder and major depressive disorder: a global systematic review and meta-analysis. World Psychiatry. 2017;16(3):308–15. https://doi.org/10.1002/wps.20458
46. Ohrnberger J, Fichera E, Sutton M. The relationship between physical and mental health: A mediation analysis. Soc Sci

Med. 2017;195:42–9. https://doi.org/10.1016/j.socscimed.2017.11.008
47. Thornicroft G. Physical health disparities and mental illness: the scandal of premature mortality. Br J Psychiatry. 2011;199(6):441–2. https://doi.org/10.1192/bjp.bp.111.092718
48. Vancampfort D, Rosenbaum S, Probst M, Soundy A, Mitchell AJ, De Hert M, et al. Promotion of cardiorespiratory fitness in schizophrenia: a clinical overview and meta-analysis. Acta Psychiatr Scand. 2015;132:131–43. https://doi.org/10.1111/acps.12407
49. Gerber M, Claussen MC, Cody R, Imboden C, Ludyga S, Scherr J, et al. Cardiovascular disease and excess mortality in depression: physical activity as a game changer. Dtsch Z. Sportmed. 2021;72:261–70. https://doi.org/10.5960/dzsm.2021.498
50. Stubbs B, Rosenbaum S, Vancampfort D, Ward PB, Schuch FB. Exercise improves cardiorespiratory fitness in people with depression: A meta-analysis of randomized control trials. J Affect Disord. 2016;190:249–53. https://doi.org/10.1016/j.jad.2015.10.010
51. Vancampfort D, Rosenbaum S, Schuch F, Ward PB, Richards J, Mugisha J, et al. Cardiorespiratory Fitness in Severe Mental Illness: A Systematic Review and Meta-analysis. Sports Med. 2017;47:343–52. https://doi.org/10.1007/s40279-016-0574-1
52. Vancampfort D, Knapen J, Probst M, van Winkel R, Deckx S, Maurissen K, et al. Considering a frame of reference for physical activity research related to the cardiometabolic risk profile in schizophrenia. Psychiatry Res. 2010;177(3):271–9. https://doi.org/10.1016/j.psychres.2010.03.011
53. Kandola A, Ashdown-Franks G, Hendrikse J, Sabiston CM, Stubbs B. Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity. Neurosci Biobehav Rev. 2019;107:525–39. https://doi.org/10.1016/j.neubiorev.2019.09.040
54. World Rugby calls for 2024 player welfare research funding applications [Internet]. Dublin: World Rugby; [cited 2024 April 01]. Available from: https://www.world.rugby/news/904491/world-rugby-calls-for-2024-player-welfare-research-funding-applications
55. Advisory Committees and Chairs [Internet]. State of Wisconsin: International Society for Sports Psychiatry (ISSP); [cited 2024 April 01]. Available from: https://www.sportspsychiatry.org/advisory-commitees-and-chairs
56. Sports Psychiatry – Journal of Sports and Exercise Psychiatry [Internet]. Bern: Hogrefe; [cited 2024 April 01]. Available from: https://www.hogrefe.com/eu/journal/sports-psychiatry

History
Received April 17, 2024
Accepted August 28, 2024
Published online October 24, 2024

Authorship
Conceptualization, writing of the original draft, and editing: MCC
Critical revisions and editing: AC, JWB, DP, IG

ORCID
Malte Christian Claussen
https://orcid.org/0000-0002-8415-3076
Alan Currie
https://orcid.org/0000-0001-5617-4868
James W. Burger
https://orcid.org/0000-0003-2388-5019
David Prossor
https://orcid.org/0000-0002-9446-2278
Ira Glick
https://orcid.org/0000-0002-8518-0893

Malte Christian Claussen, MD
Research Group Sports Psychiatry
Center for Psychiatric Research
Department of Adult Psychiatry and Psychotherapy
Psychiatric University Clinic Zurich
University of Zurich
Lenggstrasse 31
8032 Zurich
Switzerland
malte.claussen@bli.uzh.ch